3.3.5.3 Northern Dry-Mesic Forest

3.3.5.3.1 Community Overview

In this forest community, mature stands are dominated by eastern white and red pines, sometimes mixed with northern red oak and red maple. Common understory shrubs are hazelnuts, blueberries, wintergreen, and partridge-berry. Among the dominant herbs are wild sarsaparilla, Canada mayflower, and cow-wheat.

Northern dry-mesic forests are typically found on irregular glacial topography (e.g., heads-of-outwash, tunnel channel deposits), or in areas with mixed glacial features (e.g., pitted outwash interspersed with remnant moraines). Soils are loamy sands or sands, and less commonly, sandy loams. Some occurrences are in areas where bedrock is close to the surface. Areas of northern dry-mesic forest that were historically dominated by red and white pines were considered the great "pineries" before the Cutover. Today, the extent of red and white pine stands is greatly decreased, while red maple, sugar maple, aspen, and oaks have increased. Historically, fire disturbance of low to moderate intensity and frequency was key to maintaining the northern dry-mesic forest type.

3.3.5.3.2 Vertebrate Species of Greatest Conservation Need Associated with Northern Dry-Mesic Forest

Seventeen vertebrate Species of Greatest Conservation Need were identified as moderately or significantly associated with northern dry-mesic forest (Table 3-118).

Table 3-118. Vertebrate Species of Greatest Conservation Need that are (or historically were) moderately or significantly associated with northern dry-mesic forest communities.

Species Significantly Associated with Northern Dry-Mesic Forest
Birds
Red Crossbill
Mammals
Northern Flying Squirrel
Gray Wolf
American Marten
Species Moderately Associated with Northern Dry-Mesic Forest
Birds
Northern Goshawk
Red-shouldered Hawk
Whip-poor-will
Least Flycatcher
Veery
Golden-winged Warbler
Black-throated Warbler
Canada Warbler
Herptiles
Northern Prairie Skink
Mammals
Northern Long-eared Bat
Silver-haired Bat
Eastern Red Bat
Hoary Bat

In order to provide a framework for decision-makers to set priorities for conservation actions, the species identified in Table 3-118 were subject to further analysis. The additional analysis identified the best opportunities, by Ecological Landscape, for protection, restoration, and/or management of both northern dry-mesic forest and associated vertebrate Species of Greatest Conservation Need. The steps of this analysis were:

- Each species was examined relative to its probability of occurrence in each of the 16 Ecological Landscapes in Wisconsin. This information was then cross-referenced with the opportunity for protection, restoration, and/or management of northern dry-mesic forest in each of the Ecological Landscapes (Tables 3-119 and 3-120).

- Using the analysis described above, a species was further selected if it had both a significant association with northern dry-mesic forest and a high probability of occurring in an Ecological Landscape(s) that represents a major opportunity for protection, restoration and/or management of northern dry-mesic forest. These species are shown in Figure 3-25.

Table 3-119. Vertebrate Species of Greatest Conservation Need that are (or historically were) *significantly* associated with northern dry-mesic forest communities and their association with Ecological Landscapes that support northern dry-mesic forest.

Northern Dry-Mesic Forest	Birds (1)*	Mammals (3)		
Ecological Landscape grouped by opportunity for management, protection, and/or restoration of this community type	Red Crossbill	Northern Flying Squirrel	Gray Wolf	American Marten
MAJOR				
Northeast Sands				
Northern Highland				
Northwest Sands				
IMPORTANT				
Central Lake Michigan Coastal				
Central Sand Plains				
Forest Transition				
North Central Forest				
Northern Lake Michigan Coastal				
Northwest Lowlands				
Superior Coastal Plain				
Western Coulee and Ridges				
PRESENT (MINOR)				
Central Sand Hills				
Southeast Glacial Plains				
Western Prairie				

Color Key

- = **HIGH probability the species occurs in this Ecological Landscape**
- = **MODERATE probability the species occurs in this Ecological Landscape**
- = **LOW or NO probability the species occurs in this Ecological Landscape**

*** The number shown in parentheses is the number of Species of Greatest Conservation Need from a particular taxa group that are included in the table. Taxa groups that are not shown did not have any Species of Greatest Conservation Need that met the criteria necessary for inclusion in this table.**

Table 3-120. Vertebrate Species of Greatest Conservation Need that are (or historically were) *moderately* associated with northern dry-mesic forest communities and their association with Ecological Landscapes that support northern dry-mesic forest.

Northern Dry-Mesic Forest	Birds (8)*								Herptiles (1)	Mammals (4)			
Ecological Landscape grouped by opportunity for management, protection, and/or restoration of this community type	Northern Goshawk	Red-shouldered Hawk	Whip-poor-will	Least Flycatcher	Veery	Golden-winged Warbler	Black-throated Blue Warbler	Canada Warbler	Northern Prairie Skink	Northern Long-eared Bat	Silver-haired Bat	Eastern Red Bat	Hoary Bat
MAJOR													
Northeast Sands	M	M	H	H	H	H		M					
Northern Highland	H		H	H	H	H	H	H				M	
Northwest Sands	M	M	H	H	H	H		M	H				
IMPORTANT													
Central Lake Michigan Coastal			M	H	H	M	M	M		M	M	M	M
Central Sand Plains	M	H	H	H	H	H		M		M	M	M	M
Forest Transition	M	H	H	H	H	H	H	M	M	M	M	H	M
North Central Forest	H	H	H	H	H	H	H	H		M	H	M	H
Northern Lake Michigan Coastal	H	H	H	H	H	M	H	H		M	M	M	M
Northwest Lowlands	M			H	H	H		H		M	M	M	M
Superior Coastal Plain				H	H	H	H	H		M	M	M	M
Western Coulee and Ridges		H	H	H	H				H	H	M	M	M
PRESENT (MINOR)													
Central Sand Hills	M	H	H	H	H	M				M	M	M	M
Southeast Glacial Plains		M	M	H	M	M				M	M	M	M
Western Prairie				H	M				H				

Color Key

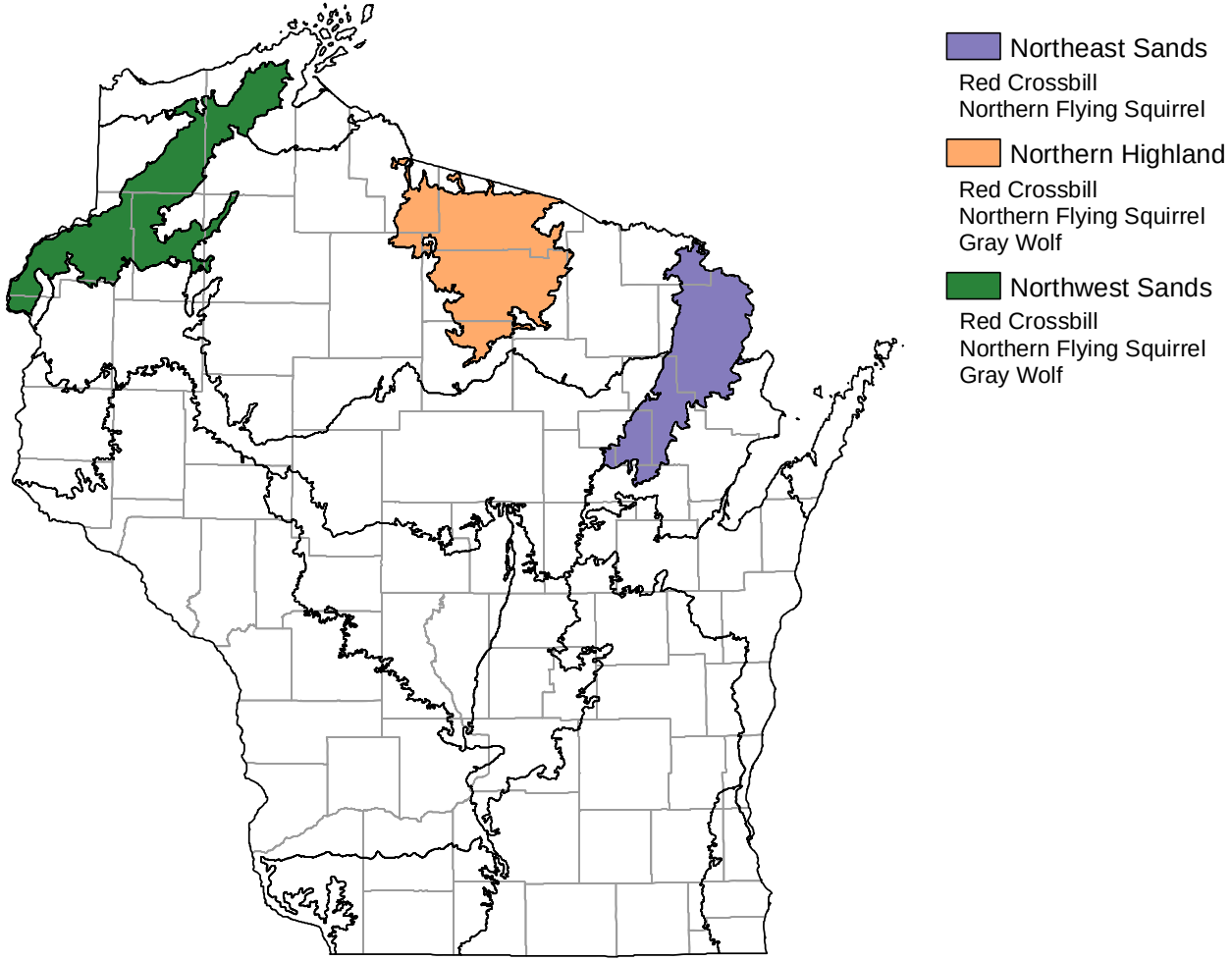
H = **HIGH probability the species occurs in this Ecological Landscape**

M = **MODERATE probability the species occurs in this Ecological Landscape**

= **LOW or NO probability the species occurs in this Ecological Landscape**

*** The number shown in parentheses is the number of Species of Greatest Conservation Need from a particular taxa group that are included in the table. Taxa groups that are not shown did not have any Species of Greatest Conservation Need that met the criteria necessary for inclusion in this table.**

Figure 3-25. Vertebrate Species of Greatest Conservation Need that have ***both* a significant association with northern dry-mesic forest ***and*** a high probability of occurring in an Ecological Landscape(s) that represents a major opportunity for protection, restoration and/or management of northern dry-mesic forest.**



3.3.5.3.3 Threats and Priority Conservation Actions for Northern Dry-Mesic Forest

3.3.5.3.3.1 Statewide Overview of Threats and Priority Conservation Actions for Northern Dry-Mesic Forest

The following list of threats and priority conservation actions were identified for northern dry-mesic forest in Wisconsin. The threats and priority conservation actions described below apply to all of the Ecological Landscapes in Section 3.3.5.3.3.2 unless otherwise indicated.

Threats and Issues

- Large patches and old forests are underrepresented.
- Red pine stands of natural origin are scarce, as are mixed red and white pine stands.
- Fragmentation can be an issue in some parts of the state.
- Unsustainable forest management practices and harvest during improper seasons can result in soil damage and sedimentation into aquatic and wetland systems.
- Invasives (e.g., Asian honeysuckles and Japanese barberry) are a problem in some places.
- Compositional changes are taking place with sugar and red maples increasing at the expense of other tree species.
- The lack of windthrow gaps, decreased fire frequencies, and deer herbivory are factors that contribute to changes in forest composition.
- Decreased fire frequencies have resulted in an increase in the presence of fire intolerant species in this community and a reduction in fire tolerant species.
- Many of the areas where this community type occurs are scenic and contain lakes, making them highly desirable for recreation and development. Development can result in loss of the community type.
- High road densities and unhardened road-stream crossings contribute to soil loss and sedimentation. Vehicle use on sensitive soils can lead to soil erosion and facilitate the spread of invasive plants.

Priority Conservation Actions

- Encourage land-use planning that maintains large forest blocks and quality occurrences of this type, and discourages activities that continue to fragment contiguous blocks. Increase connectivity where feasible.
- Increase representation of red and white pine forests, and older age-classes. Use adaptive management techniques to restore structure and composition.
- Develop techniques for using prescribed fire to reduce other woody competition when establishing red and white pine forests.
- Develop reliable natural regeneration techniques for red pine, and mixed red and white pine forests.
- Lower deer numbers, if possible.
- Continue to support research to find biocontrols for invasives, and use management techniques that limit the spread of invasives. Monitor and control invasives that are already established.
- Use Best Management Practices and other sustainable forest community management practices to prevent detrimental soil and water effects.

3.3.5.3.3.2 Additional Considerations for Northern Dry-Mesic Forest by Ecological Landscape

Special considerations have been identified for those Ecological Landscapes where major or important opportunities for protection, restoration, and/or management of northern dry-mesic forest exist. Those considerations are described below and are in addition to the statewide threats and priority conservation actions for northern dry-mesic forest found in Section 3.3.5.3.3.1.

Additional Considerations for Northern Dry-Mesic Forest in Ecological Landscapes with ***Major*** Opportunities for Protection, Restoration, and/or Management of Northern Dry-Mesic Forest

Northern Highland

This Ecological Landscape has a high degree of natural heterogeneity, including complexes of different forest types, wetlands and lakes. Natural ecotones are an important feature. This Ecological Landscape is the best place to maintain or restore large blocks of northern dry-mesic forest. The community type is still widespread within the Ecological Landscape, but due to the lack of natural disturbance combined with deer herbivory, maples are becoming quite competitive. Use adaptive management techniques, including prescribed fire, to restore structure and composition. Opportunities exist to maintain and connect larger blocks in both the Northern Highland-American Legion State Forest and the Chequamegon-Nicolet National Forests.

Fragmentation is currently less of an issue in this Ecological Landscape than in other landscapes where this type occurs. Invasives are now becoming a problem, but there is still potential to control smaller infestations if effective measures are taken. Motorized recreation is increasing and may facilitate the spread of invasive species.

Northeast Sands

This community type is common in the Ecological Landscape. Motorized recreation is increasing and may contribute to soil loss and sedimentation, and facilitate the spread of invasive species. Fragmentation is currently less of an issue in this Ecological Landscape than in other landscapes where this type occurs.

Northwest Sands

Northern dry-mesic forests are widespread throughout this Ecological Landscape, and particularly in the northern portion, though much of it is in red pine plantations. Motorized recreation is increasing and may contribute to soil loss and sedimentation, and facilitate the spread of invasive species. Opportunities exist to maintain and connect larger blocks in both the Brule River State Forest and the Chequamegon-Nicolet National Forests.

Additional Considerations for Northern Dry-Mesic Forest in Ecological Landscapes with ***Important*** Opportunities for Protection, Restoration, and/or Management of Northern Dry-Mesic Forest

Central Sand Plains

Fragmentation is a major issue in this Ecological Landscape. Patch sizes are small and most are farm woodlots. Invasive plants such as garlic mustard and buckthorns are a problem.

Older forests in this Ecological Landscape are desirable, especially if they are contained in or linked with blocks of other forest types, such as the oak forests dominant on areas of the Black River State Forest (Jackson Co), Clark County Forest, Jackson County Forest, and Quincy Bluff (Adams County). Alternative management techniques, including prescribed fire, should be used to restore structure and composition.

Forest Transition

Fragmentation is a major issue in this Ecological Landscape, where upland forest is interspersed with farmland, except in the eastern portion of the Ecological Landscape that includes the Menominee

Reservation and Chequamegon-Nicolet National Forests. Residential development is further fragmenting and changing this community. Invasives such as buckthorns and Asian honeysuckles are a greater problem here than in the Ecological Landscapes further north. Older northern dry-mesic forests in this Ecological Landscape are desirable, especially if they are contained in or linked with blocks of other forest types.

North Central Forest

Fragmentation is an issue in some parts of this Ecological Landscape, especially where residential development and associated road construction are occurring.

This Ecological Landscape has opportunities to maintain the northern dry-mesic forest community within the matrix of other forest types in the Ecological Landscape, and to implement other conservation actions (e.g., encourage representation of pine species, older age-classes, and structural diversity) because of the large public ownership. Linkages with other large forested areas should be maintained or enhanced, including connectivity with the Chequamegon-Nicolet and Ottawa National Forests, and the Northern Highland-American Legion State Forest. Depending on landowner objectives, it may be possible to meet many of the needs for early successional habitats on industrial and county forests.

Central Lake Michigan Coastal, Northern Lake Michigan Coastal, Superior Coastal Plain, Western Coulees and Ridges, Northwest Lowlands

The above Ecological Landscapes contain only a small percentage of northern dry-mesic forest, and opportunities for maintenance or restoration are limited. Individual sites may still be important as components of the larger landscape.